

## Brain Tumor Fact Sheet

CIRM funds many projects seeking to better understand brain tumors and to translate those discoveries into new therapies.

### Description

A type of brain tumor called a high-grade glioma, or malignant brain tumor, is among the hardest tumors to treat. About 13,000 people die from brain tumors each year.

Gliomas are particularly difficult to treat because they are made up of tumor cells that spread throughout the brain, not remaining in a single area where they could be removed through surgery or targeted by radiation. Chemotherapy has not been effective at eradicating all of the glioma cells.

Stem cell approaches look promising for treating gliomas. Certain types of stem cell tend to migrate toward the tumor cells wherever they are in the brain. CIRM-funded researchers are trying to genetically engineer those stem cells to produce cancer-killing molecules. Transplanted into the brain, these cells would seek out the cancer cells and deliver their therapy directly where it is needed. This approach could significantly decrease toxic side-effects to normal tissues, preserving or improving the patient's quality of life.

### Clinical Stage Programs

#### ImmunoCellular Therapeutics

This team is targeting six cell surface proteins that are found on cancer stem cells in the brain cancer glioblastoma. Cells from the patient's own immune system are exposed to fragments of these cancer cell surface proteins in the lab. When returned to the patient's body, the immune system cells can now help identify and then hopefully kill the cancer stem cells responsible for the tumor's recurrence and growth.

- [Learn more about this project](#)
- [Learn more about this clinical trial](#)

### CIRM Grants Targeting Brain Tumors

Researcher name	Institution	Grant Title	Grant Type	Approved funds	
Karen Aboody	City of Hope	Stem Cell-mediated Therapy for High-grade Glioma: Toward Phase I-II Clinical Trials	Disease Team Research I	\$17,890,623	
Mitchel Berger	University of California, San Francisco	Stem Cell-Mediated Oncocidal Gene Therapy of Glioblastoma (GBM)	Disease Team Research I	\$6,214,914	
Anthony Gringeri	ImmunoCellular Therapeutics	A Phase III randomized double-blind, controlled study of ICT 107 with maintenance temozolomide (TMZ) in newly diagnosed glioblastoma following resection and concomitant TMZ chemoradiotherapy	Clinical Trial Stage Projects	\$5,391,016	

Albert Wong	Stanford University	2nd Generation Vaccine for the Treatment of Glioblastoma	Therapeutic Translational Research Projects	\$2,929,889	
Noriyuki Kasahara	University of California, Los Angeles	Stem cell-based carriers for RCR vector delivery to glioblastoma	Early Translational II	\$3,340,625	
Robert Wechsler-Reya	Sanford-Burnham Medical Research Institute	The role of neural stem cells in cerebellar development, regeneration and tumorigenesis	Research Leadership	\$5,226,050	
Albert Wong	Stanford University	Recombinant Bispecific Antibody Targeting Cancer Stem Cells for the Therapy of Glioblastoma	Disease Team Therapy Planning I	\$109,750	
Stephen Forman	City of Hope	Targeting glioma cancer stem cells with receptor-engineered self-renewing memory T cells	Early Translational III	\$5,215,447	
Michelle Monje	Stanford University	White matter neuroregeneration after chemotherapy: stem cell therapy for "chemobrain"	New Faculty Physician Scientist	\$2,800,536	
Michael Barish	City of Hope	Genetically-modified neural stem cells for treatment of high-grade glioma	Disease Team Planning	\$55,000	
Michael Snyder	Stanford University	Center of Excellence for Stem Cell Genomics - Stanford	Genomics Centers of Excellence Awards (R)	\$22,796,609	
Joshua Stuart	University of California, Santa Cruz	Center of Excellence for Stem Cell Genomics - UCSC	Genomics Centers of Excellence Awards (R)	\$4,000,000	
Christine Brown	City of Hope	Phase I Study of Chimeric Antigen Receptor Engineered Central Memory T cells for the Treatment of Malignant Glioma	Clinical Trial Stage Projects	\$12,753,854	
					Total: \$88,724,313.00

## CIRM Brain Tumor Stem Cell Videos



Brain Tumors: Advancing Stem Cell Therapies - 2011 CIRM Grantee Meeting

- CIRM Stem Cellar Blogs on Brain Cancer
- Grant money could speed stem cell cures (LA Times)
- The True Seeds of Cancer (Stanford Medicine)
- Bad Seeds: Cancer's Ultimate Source (Stanford Medicine)

## Resources

- National Cancer Institute: Brain Tumor Facts
- Find a clinical trial near you: NIH Clinical Trials database
- American Brain Tumor Association
- National Brain Tumor Society
- The Brain Tumor Foundation
- Family Caregiver Alliance
- National Family Caregivers Association

## Find Out More:

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